US006226890B1

(12) **United States Patent**
Boroson et al.

(10) **Patent No.: US 6,226,890 B1**
(45) **Date of Patent: May 8, 2001**

(54) **DESICCATION OF MOISTURE-SENSITIVE ELECTRONIC DEVICES**

(75) Inventors: **Michael L. Boroson**, Rochester; **Jeffrey P. Serbicki**, Holley; **Peter G. Bessey**, Clifton Springs, all of NY (US)

(73) Assignee: **Eastman Kodak Company**, Rochester, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/543,973**

(22) Filed: **Apr. 7, 2000**

(51) **Int. Cl.**[7] **F26B 3/00**

(52) **U.S. Cl.** **34/472**; 34/474; 252/194; 501/32; 427/294

(58) **Field of Search** 34/467, 468, 469, 34/472, 473, 474; 252/194; 501/32, 39, 80; 427/294, 372.2, 386

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,308,558	*	3/1967	Orlando	34/474 X
4,013,566		3/1977	Taylor .	
4,022,560	*	5/1977	Heinonen	34/80 X
4,036,360		7/1977	Deffeyes .	
4,081,397		3/1978	Booe .	
4,974,337	*	12/1990	Tavakoli et al.	34/80 X
5,304,419		4/1994	Shores .	
5,401,536		3/1995	Shores .	
5,581,903	*	12/1996	Botich	34/264
5,591,379		1/1997	Shores .	
5,888,925	*	3/1999	Smith et al.	252/194 X
5,910,450	*	6/1999	Manns et al.	34/472 X
5,948,399	*	9/1999	McGlothlin	34/472 X

FOREIGN PATENT DOCUMENTS

0776147	5/1997	(EP) .

* cited by examiner

Primary Examiner—Stephen Gravini
(74) *Attorney, Agent, or Firm*—Raymond L. Owens

(57) **ABSTRACT**

A method of desiccating an environment surrounding a moisture-sensitive electronic device sealed within an enclosure, includes selecting a desiccant comprised of solid particles having a particle size range 0.1 to 200 micrometers, the desiccant selected to provide an equilibrium minimum humidity level lower than a humidity level to which the device is sensitive within the sealed enclosure; choosing a binder that maintains or enhances the moisture absorption rate of the desiccant for blending the selected desiccant therein, the binder being in liquid phase or dissolved in a liquid; forming a castable blend including at least the desiccant particles and the binder, the blend having a preferred weight fraction of the desiccant particles in the blend in a range of 10% to 90%; casting a measured amount of the blend onto a portion of an interior surface of an enclosure to form a desiccant layer thereover, the enclosure having a sealing flange; solidifying the desiccant layer to a solid; and sealing the electronic device with the enclosure along the sealing flange.

27 Claims, 4 Drawing Sheets